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- 1 [ProfileMe: hardware support for instruction-level profiling on out-of-order processors](#)  
 Jeffrey Dean, James E. Hicks, Carl A. Waldspurger, William E. Weihl, George Chrysos  
 December 1997 **Proceedings of the 30th annual ACM/IEEE international symposium on Microarchitecture**

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Profile data is valuable for identifying performance bottlenecks and guiding optimizations. Periodic sampling of a processor's performance monitoring hardware is an effective, unobtrusive way to obtain detailed profiles. Unfortunately, existing hardware simply counts events, such as cache misses and branch mispredictions, and cannot accurately attribute these events to instructions, especially on out-of-order machines. We propose an alternative approach, called ProfileMe, that samples instruction ...

- 2 [SIGMICRO 2 - Advances in microprogramming: Microprogramming for probability distribution sampling](#)

T. G. Lewis

August 1972 **Proceedings of the ACM annual conference - Volume 1**Full text available: pdf(391.65 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Microprogramming of special instructions for sampling of random variates from any probability distribution is a means of increasing sampling speed. The diversity of sampling techniques is narrowed to one general algorithm; conditional bit sampling. Conditional bit sampling, uses a high speed uniform random number generator based on feedback shift registers to sample one bit at a time. The probability of a bit being a one in the j-th position of a binary expanded variate is stored in a table of c ...

- 3 [SMARTS: accelerating microarchitecture simulation via rigorous statistical sampling](#)

Roland E. Wunderlich, Thomas F. Wenisch, Babak Falsafi, James C. Hoe

May 2003 **ACM SIGARCH Computer Architecture News , Proceedings of the 30th annual international symposium on Computer architecture**, Volume 31 Issue 2Full text available: pdf(278.61 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Current software-based microarchitecture simulators are many orders of magnitude slower than the hardware they simulate. Hence, most microarchitecture design studies draw their conclusions from drastically truncated benchmark simulations that are often inaccurate and misleading. This paper presents the Sampling Microarchitecture Simulation (SMARTS) framework as an approach to enable fast and accurate performance measurements of full-length benchmarks. SMARTS accelerates simulation by selectively ...



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# 1 [Secure statistical databases with random sample queries](#)

Dorothy E. Denning

September 1980 **ACM Transactions on Database Systems (TODS)**, Volume 5 Issue 3

Full text available: pdf(1.56 MB)

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A new inference control, called random sample queries, is proposed for safeguarding confidential data in on-line statistical databases. The random sample queries control deals directly with the basic principle of compromise by making it impossible for a questioner to control precisely the formation of query sets. Queries for relative frequencies and averages are computed using random samples drawn from the query sets. The sampling strategy permits the release of accurate and timely statistical data.

**Keywords:** confidentiality, database security, disclosure controls, sampling, statistical database

# 2 [Traffic engineering: Estimating flow distributions from sampled flow statistics](#)

Nick Duffield, Carsten Lund, Mikkel Thorup

August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications**

Full text available: pdf(333.29 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Passive traffic measurement increasingly employs sampling at the packet level. Many high-end routers form flow statistics from a sampled substream of packets. Sampling is necessary in order to control the consumption of resources by the measurement operations. However, knowledge of the statistics of flows in the *unsampled* stream remains useful, for understanding both characteristics of source traffic, and consumption of resources in the network. This paper provides methods that use flow statistics.

**Keywords:** IP flows, maximum likelihood estimation, packet sampling

# 3 [Session 6: flow measurement: Properties and prediction of flow statistics from sampled packet streams](#)

Nick Duffield, Carsten Lund, Mikkel Thorup

November 2002 **Proceedings of the second ACM SIGCOMM Workshop on Internet measurement**

Full text available: pdf(1.25 MB)

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Many routers can generate and export statistics on flows of packets that traverse them.